site Also known as
Gate City Truck Repair

ARA/Smith's
6301 Burnt Poplar Road
Greensboro
Groundwater Incident # 10077

CSA by Shield Environmental Associates Rcvd 3/8/94

Addendum to Comprehensive Site Assessment by Pyramid Environmental dated 6/19/95 (not in gw file) requested copy 2/7/96, rcvd 2/8/96

15.1 COMPREHENSIVE SITE ASSESSMENT (CSA)

The CSA sufficiently characterizes the cause, significance and extent of groundwater and soil contamination such that a Corrective Action Plan (CAP) can be developed.

A CSA for groundwater and soil contamination is required if any of the following requirements apply:

1. Contaminant concentrations in groundwater exceed the 15A NCAC 2L groundwater standards

2. Free product is present on the water table

3. Contaminated soil is in contact with groundwater or in proximity to groundwater

4. The Division of Environmental Management or other regulatory agency requests it

5. For petroleum contaminated sites, in-situ soils exceeding the final cleanup level determined by the SSE exist outside the spatial boundaries described in Section 8 "Limiting Quantities and Costs of Soil Treatment/Disposal".

NOTE: *The Executive Summary should provide a brief overview of the pertinent site information, i.e., it should provide sufficient information to acquaint the reader with the who, what, when, where, why and how of site activities to date.*

3. Table of Contents

a. First page number for each section listed
b. List of Figures (all placed in a single section following contents text)
c. List of Tables (all placed in a single section following contents text)
d List of Appendices

4. Site History and Source Characterization

a. Give a history of property ownership and use. Discuss chronology with references, lists and tables indicating owners/operators, dates of ownership (immediately prior to 1/1/74 through the present), uses of site and potential sources, which may include UST's, aboveground storage tanks (AST's), chemicals used and stored onsite, hazardous substances, etc.

b. Summarize release incidents and environmental investigations of known contamination. Discuss current and previous releases including but not limited to dates, sources, extent, inventory discrepancies, system tightness test, odors, stained soils, observed product, samples taken, previous enforcement orders, civil penalty assessments, etc. Reference any previous reports

c. Summarize corrective actions to date (reference any reports), emergency response/initial abatement, free product recovery and primary and secondary source removal

5. Potential Receptors and Migration Pathways

This section should include identification and location of water supplies within 1500 feet of the contamination; surface water intakes for public water supplies with 0.5 mile; identification of adjacent property owners; identification of subsurface utilities; availability of municipal water lines and identification and discussion of the potential impacts that different pathways may have on contaminant migration (e.g., septic leach fields, utility lines and the effects of fluid mounding, etc.).

Reference the required figures and tables in subsections 10 and 11 below.

9. **References**

a. Interview summaries, including dates, contacts, etc.
b. File reviews for onsite/offsite sources
c. Resource materials cited

10. **Figures (All figures should include scale, north arrow, and site location in addition to the information listed below)**

a. 7 1/2 minute USGS topographical quadrangle map (photocopied portion)
   - indicate water supplies within 1500 feet
   - quadrangle name
   - north arrow
   - scale

b. County road map

   - include primary/secondary road numbers

c. Site base map/plan

   - North arrow

   - Surface features including property boundaries, roads/easements/rights of way, existing and previous building/structure, pavements, product or chemical storage areas, surface water bodies, drainage ways, wetlands, etc.

   - Subsurface features including underground storage tank systems (former/existing), basements, utilities, wells of all types, septic tanks, etc.

NOTE: *All reports submitted to DEM should make use of graphical methods of data presentation to the greatest extent possible. An appropriate number of useful and topical maps, figures and tables should be provided so that rapid and comprehensive reviews of site data are possible. Furthermore, the text of reports should provide a concise synthesis of this graphical information so as to clearly communicate the preparer's own interpretations of the data.*

If possible, a single base map should be used to prepare site plans, potentiometric maps, isocontour maps, etc. using a map scale of 1 inch = 100 feet. Maps and figures submitted to DEM should include conventional symbols,

j. Potentiometric/groundwater elevation contour map

- Superimpose on a base map
- Show and label source location(s), monitor wells and recovery wells
- Note water level elevations at wells
- Note footnote pumping conditions
- Identify and locate datum (arbitrary 100', USGS, NGVD) or benchmark
- Use appropriate contour interval
- Show direction of groundwater flow and average gradient

NOTE: *A separate map (modified base map) or acetate overlays may be used for all potentiometric contour maps.*

k. Free product thickness map

- Superimpose on a base map with all wells labelled and thickness noted at wells
- Use appropriate contour interval (0.01 foot minimum)
- Note date and method of measurement

NOTE: *Acceptable methods of free product measurement include interface probes, tape/paste, or other DEM pre-approved methods only.*

l. Contaminant isoconcentration contour map(s)

- Superimpose on a base map with all wells labeled
- Label wells with contaminant, concentration and footnote date of sampling
- Plot total volatile (if applicable) and most widespread contaminant, most concentrated contaminant, (if warranted)

NOTE: *For all applicable plots, a 15A NCAC 2L standard contour must be shown in bold. A series of wells with contaminant levels near or below the 2L standard will be required to demonstrate this condition.*

d. Summary table of dissolved contaminant concentrations in groundwater

- Include "at risk" water supply wells, contaminated supply wells, monitor wells, sample identification numbers referenced on base map, analytical methods and units of measure

12. Appendices

a. relevant information

- Standard operating procedures used at site for sampling, equipment decontamination, field screening, well construction, well gauging, etc.
- Boring logs and soil descriptions
- Well construction records
- Chain-of-custody forms
- Laboratory reports for all samples
- List and/or copies of permits received, permitting agency, permit number and date issued
- Other documentation as appropriate (e.g., tank/line tightness results, aquifer tests)

Limitations: Information-intensive and memory-intensive. Requires a fast and "large" PC.

Recommended for: *Complex Problems* Simulating mass flow in settings where large amounts of descriptive aquifer information are available.

8. **MOC** (USGS-2D Transport Method Of Characteristics)

Characteristics: Numerical Simulation, finite difference, 2-dimensional nonconservative solute transport model used to simulate groundwater flow in heterogeneous, anisotropic aquifers. Considers convective transport, hydrodynamic dispersion, mixing or dilution from recharge, and chemical reactions.

Limitations: Information-intensive and memory-intensive. Requires a fast and "large" PC.

Recommended for: *Complex Problems* Simulating nonconservative solute transport in settings where large amounts of descriptive aquifer and solute information are available.

9. **BIOPLUME II** (USEPA)

Characteristics: Numerical Simulation, finite difference, 2-dimensional nonconservative solute transport model used to simulate the transport of dissolved hydrocarbons under the influence of oxygen-limited biodegradation. Utilizes the method of characteristics. Considers convection, dispersion, mixing, and biodegradation.

Limitations: Information-intensive and memory-intensive. Requires a fast and "large" PC.

Recommended for: *Complex Problems* Simulating the nonconservative transport of dissolved hydrocarbons which are subject to convection, dispersion, mixing, and biodegradation.

10. **FLOWPATH** (Waterloo Hydrogeologic Software)

Characteristics: Numerical Simulation, finite difference, steady-state, 2-dimensional mass flow model. One of the most popular models used for pathline problems.

Limitations: Requires "gridding".

Recommended for: *Complex Problems* Simulating the flow paths which feed water supply wells, delineating capture zones/injection zones, evapotranspiration, etc. in confined, semiconfined, or unconfined aquifers which are heterogeneous and anisotropic.